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AN ANALYSIS OF CHINESE COMMUNIST ECONOMIC POWER

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An Analysis of Chinese Communist Economic Power

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Carlisle Barracks, Pennsylvania
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SUMMARY

The international interest aroused by Communist China has steadily increased yearly since she gained control of the mainland in 1949. The author feared that the Sino-Soviet rift would act as an accelerator of world unrest, as China thrusts and parries with Russia for the predominant role in the Communist world. In spite of the rift having a retarding effect on China's growth, however, the Chinese have never lost sight of their world power goal. Like an ant colony, China labors incessantly toward that end. The recent explosion of two nuclear devices has increased world anxiety as to her power potential.

The scope of this thesis is to analyze the economic power of Communist China with an ultimate conclusion as to her capability to rise to a world power by 1980.

Inasmuch as China is an agrarian state and must depend upon the products of earth for economic growth, the agricultural sector was examined in detail and found lacking in general. The elements of industry, demography, transportation, and natural resources were covered only to illustrate their bearing on China's economic growth potential through agriculture. However, it was determined that her exploding population has a negating effect on any improvements sustained in economic growth. China's transportation facilities as well as a faltering industrial base are totally inadequate. Lastly, it was apparent that the extremely limited capital available for investment is seriously curtailing a rapid growth rate, which is mandatory in the building of a modern powerful nation. There are no indications that China will solve these problems in the next 15 years. Therefore, she will not become a modern power in a class with the United States or the USSR by 1980.

CHAPTER 1

INTRODUCTION

China's desire to rise to a world power is of great interest and will have a profound effect on the entire world. The Chinese economic transformation has great international significance, especially on the underdeveloped countries with similar economic structures. It is these countries that might desire to follow her model, if it is successful. The underdeveloped countries must have been most favorably impressed by the great economic strides China made in the first 10 years under Communist control: a period when any progress would be very noticeable, since 25 years of war and revolution had left China a destitute, pauper state. Equally obvious should be the dramatic setback caused by the failures of the Great Leap Forward and the withdrawal of Russian economic aid.

Of far more importance is a determination of where China is going in the future and how long it will take her to get there. It is the purpose of this paper to examine the economic potential of Communist China, highlight developing trends, and predict her 1980 power position in the community of nations.

The agricultural sector of China's economy received the majority of research attention because of China's agrarian base. However, her economic potential is affected by population growth rate, transportation facilities, natural resources, industrial state, and available capital for investment. The interactions of these

contributing factors were considered in reaching the conclusions presented in chapter 9.

Research on China was continually confused by the ever present problem of validity of statistics released by a closed society. To aggravate the situation further, the Chinese Communists stopped the flow of their statistics after 1959, when the failure of the Great Leap Forward became obvious. This act only served to substantiate non-Communist claims that Chinese statistics were falsified, over-reported, and used by the Party to defend the Party line.

Chia Chi-Yun, the director of the Statistical Bureau, advocated that all published statistics should reflect only achievements and triumphs.[1] He announced at the national conference of directors of provincial and city statistical bureaus, on November 23, 1959:

> We must make statistical work the tame and useful tool of the Party. . . . The practice of starting purely from statistical figures is in effect a tendency toward objectivism without a political viewpoint, ...[2]

On July 30, 1962, Peiping Ta-Kung-Pao published an article that admitted the inaccuracies of statistics:

> At present, the statistical figures worked out by some commercial enterprises are not accurate enough. In some cases, the statisticians have worked out wrong figures, ... Quite a number of comrades do not pay sufficiently close attention to working out statistics. Some people are of the opinion that a slight discrepancy in figures does not harm and that an inaccurate figure is better than having no figures at all. . . .[3]

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[1]Chu-Yuan Cheng, Communist China's Economy, 1949-1962, p. 188.

[2]Ibid., p. 187.

[3]Ibid., p. 186.

In spite of these difficulties, some authorities on China, using background information, expertise, and sorting the wheat from the chaff, have produced realistic appraisals of China's economy. This paper is based on a selection of many of these works in an effort to gain a clear picture of China's present and future position.

CHAPTER 2

AGRICULTURE

When the Chinese Communists came to power in 1949, the peasant agricultural base was badly disrupted because of years of maladministration, warfare, and revolution. The regime set about at once to remedy this situation. It aspired to transform a backward agrarian society into a modern industrial giant in record time.[1] Therefore, a monumental task befell China's agricultural productivity: to deliver an ever-increasing supply of food to a growing population, to supply the exports to be used in exchange for imported capital goods needed in the country's industrialization, and to provide raw materials for the country's light manufacturing industry.[2]

However, the regime made a grave mistake in attempting to industrialize too rapidly at the expense of agriculture. In prewar China, 64.5 percent of the national product came from agriculture, and this situation remained comparatively unchanged during the early years of Communist control. During the first Five Year Plan in 1953 a major share of new investment was concentrated on industrial development, with an associated slump in agricultural productivity. This trend remained for years, as

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[1]Robert A. Cook, "China: A Demographic Crisis," Population Bulletin, Vol. XIX, No. 5, Aug. 1963, p. 110.

[2]Chang-tu Hu, China, Survey of World Cultures, p. 334.

the following table indicates:[3]

Year	Percent National Output Attributed to Agriculture
1951	61.4
1952	58.5
1953	52.8
1954	49.8
1955	50.3
1956	45.3
1957	43.5
1958	36.4
1959	33.4

When the impact of the above figures was realized, and the reasons for the failure of the Great Leap became apparent, the regime took a new look at priorities and procedures and initiated corrective actions. A Twelve Year Plan that would stimulate China's agricultural recovery in the years 1956 to 1967 was published in 1957 and adopted in April 1960.[4] The Communist regime further recognized the basic economic importance of agriculture, as indicated by the following quotation from the Peiping People's Daily:

> Agriculture plays a decisive role in influencing the whole social life. . . . It is only after agricultural production has been rehabilitated and expanded and

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[3]Cheng, op. cit., p. 114.

[4]T. J. Hughes and D. E. T. Luard, The Economic Development of Communist China, p. 180.

> after agriculture, the foundation of the national economy, has been consolidated that industry, communications and transport, and cultural and educational undertakings can be developed.[5]

The regime again stressed the importance of agriculture when the document "Decision on Further Consolidation of the Collective Economy of People's Communes and Development of Agricultural Production" was adopted by the 10th plenum of the 8th Chinese Communist Party on September 27, 1962. The document stated that the Central Committee was of the opinion that the unified national economic plan of the country must proceed from agricultural development. It must be arranged in the order of agriculture, light industry, and heavy industry. In other words, the regime must use agricultural development to push forward the socialist reconstruction task of the country. It is wrong to ignore the importance of agriculture in social reconstruction. Each kind of industry must firmly shift its point of emphasis so as to have agriculture as its basis. Step by step, China must establish a sound industrial system capable of rendering service to agricultural production.[6]

In response to the new thinking, the regime proposed a new theory in improving agricultural productivity by the "modernization of agriculture." This modernization was to encompass (1)

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[5]US Joint Publications Research Service, Reiteration of Economic Priorities, No. 16022, Washington, 5 Nov. 1962, p. 63.

[6]Li-Tien Min, Crisis of the Chinese Communist Regime, p. 1.

mechanization, (2) fertilization, (3) popularization of irrigation systems and water conservancy facilities, and (4) electrification.[7]

MECHANIZATION

The mechanization of agriculture was first emphasized during the land reform in 1951-52, and again during the communization of agriculture in 1955-56.[8] From the very outset of the "mechanization of agriculture" in Communist China, the number of tractors in use has increased steadily from less than 1000 in 1949[9] to 59,000 in 1959 and 100,000 in November 1962.[10] The increase, however, falls far short of sufficient numbers to meet the current needs. As late as 1962, only 5 percent of the total arable land area in the country was cultivated with machines, 15 percent was semi-mechanized, and 80 percent of the land still was cultivated by manual labor.

It has been officially estimated that China will need 1.2-1.5 million tractors to mechanize agriculture. Moreover, some 120,000-150,000 tractors will wear out each year and need replacement. However, it is impossible for Communist China to produce such a great quantity of tractors in the immediate

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[7]Tien Chin Hwang, Bitter Struggle of Chinese Communists in 1963, p. 4.

[8]Choh-Ming Li, Industrial Development in Communist China, p. 135.

[9]Ibid., p. 138.

[10]Yuan-Li Wu and others, The Economic Potential of Communist China, p. 28.

future. Even the Soviet Union, a highly industrialized country compared to China today, was able to manufacture only 650,000 tractors in 1955-57.[11]

Efforts have been made to increase locally manufactured tractors, but the results have been extremely slow. The assignment of over 100 Chinese machine manufacturing works to the production of farm machinery and implements has led to the officially claimed cumulative manufacture of 41,000 standard tractor units during 1960-62.[12] A Russian sponsored tractor building plant set up by 1960 at Layang, Honan province, with a capacity of 15,000 tractors a year,[13] should have produced more than the above number working singly. Additional tractor plants have been added to the production potential since 1959 in Tientsin, Nanching, Changchun, Anshan, and Shenyang.[14] All indications point to under-capacity production in industry supporting agriculture, partly because of the 3 consecutive years of bad harvest during 1959-1961.

Domestic production of tractors and other agricultural machines since 1958 apparently has been handicapped by the shortage of raw materials, particularly steel. Certain types of steel products and essential parts of agricultural machinery

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[11]Cheng, op. cit., p. 169.

[12]Wu and others, op. cit., p. 29.

[13]Hsiang-kao Kao, Ten Years of Chinese Communist Economy, p. 38.

[14]Leslie T. C. Kuo, "Agricultural Mechanization in Communist China," The Chinese Quarterly, No. 17, Jan-Mar 1964, p. 136.

cannot be produced in China and, therefore, have to be imported. One model of Chinese produced tractor, for example, consists of some 10,000 parts, and requires more than 450 kinds of metal. When this model tractor was first produced in 1959, most of these metals were imported. The next 2 or 3 years showed an increase in domestically produced metals, but in 1962 there were still more than 30 kinds of the required metal that China could not produce. Furthermore, the quality of some of the metals and parts produced in China were below the required standard.[15]

The problems of depreciation and maintenance of tractors further handicapped the mechanization of agriculture. In 1961, about 20 percent of the tractors and 20-30 percent of the irrigation machines needed repair. Yet, there were no repair networks, nor sufficient spare parts available. Moreover, operators and maintenance personnel of tractors and other farm machines were generally ineffective, since they had undergone only a very short period of technical training.[16] One writer reports that a 20 percent increase in agricultural machinery and implements production in 1963 probably was composed, to a large extent, of repair and replacement equipment.[17]

The use of a great variety of agricultural machines has created additional technical problems. For example, one district

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[15]Li, op. cit., p. 139.

[16]Cheng, op. cit., p. 103.

[17]"China's Economy and Its Prospects," Current History, Sep. 1964, p. 168.

in Hopei Province was using eight models that differed in horsepower and types of fuel consumed. In the Ningpo District, Chekiang Province, more than 40 types of internal combustion machines were used for drainage and irrigation. This situation made it difficult for the technicians to handle the machines because of their limited technical training. It also created the problem of obtaining many kinds of fuel and accessories.[18]

Most of the farm land in China does not lend itself to mechanization, even after agricultural collectivization. Irrigation canals divide the land into small fragments, abandoned wells and ditches have not been flattened out, and boundary stones have not been removed. To complicate mechanization further, for example, some roads, bridges, and tunnels between farms are not wide or strong enough for the passage of large farm machines, and detours are required to move between farms.[19] The production of a suitable tractor for soft mud bottom rice paddy cultivation has proven unsuccessful. Vast amounts of capital would be required to produce a machine capable of cultivating this most important type of agricultural land.[20]

According to official estimates, the use of tractors and other mechanical tools throughout Communist China would require the expenditure of $8 to $12 per mou (1/6 acre) of land. It is

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[18]Li, op. cit., p. 140.
[19]Hughes and Luard, op. cit., p. 183.
[20]Kang Chao, "Agriculture in China Today," Current History, p. 173.

estimated, therefore, that the mechanization of the 267 million acres of agricultural land would require an investment of $13 to $20 billion.[21]

The questionable results that could be obtained from such a gross expenditure by a struggling nation evidently have caused the Chinese planners to take another look at mechanization. Until 1962 a great increase in tractor production was evident, but then it was realized that, in addition to the above mentioned short-comings, (a) the tractor was no help in abnormal climate conditions, (b) in good weather it caused no appreciable increase in output per unit of land, (c) mechanization was chiefly a labor saving device and, (d) labor was plentiful in the Chinese countryside.[22] These factors, coupled with the rapidly increasing supply of labor in China and the intensive methods of cultivation, make it unlikely that the Government will continue to give much priority to agricultural mechanization.[23] Furthermore, Chinese economists have cited empirical data to show that the large capital investment for tractors and expensive fuels makes them uneconomical.

Therefore, Communist China began in 1963 to slow down mechanization in the agricultural sector, and 3000 fewer tractors were produced in 1964. The use of most tractors was limited to

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[21]Cheng, op. cit., p. 170.
[22]Chao, op. cit., pp. 172-173.
[23]Hughes and Luard, op. cit., p. 183.

large-sized cotton and wheat fields in plains areas and to large state farms.[24] As of the end of 1960, 28,000 (nearly one third of all the tractors in China) were employed on the 2490 large state farms.[25]

However, the regime still is committed to the expansion of mechanization as capital permits, and to the annual manufacture of replacement parts and units of machinery. The annual capital outlay for maintenance is difficult to determine, but one economist places the combined annual cost of mechanization and electrification at approximately $1 billion.[26]

FERTILIZER

The planners became interested in other means of increasing land productivity to provide a more immediate tangible result for capital expenditure. One method of relieving this pressing problem was to use chemical fertilizer. Initially, the use of fertilizers was not a paramount consideration, as the planners believed that agricultural mechanization, electrification, water conservation, and irrigation was the solution for increased production.

However, the food shortages that resulted from the failure of the Great Leap Forward made China's dependence on farm

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[24]Chao, op. cit., p. 173.
[25]Yuan Li Wu, The Economy of Communist China, p. 154.
[26]Wu and others, op. cit., p. 93.

production obvious to the Government. The regime decided to concentrate on the manufacture of chemical fertilizer to increase food production for an expanding population. The Minister of Agriculture, Liao Lu-yen, said in 1956 that the 12-Year Agricultural Plan (1956-67) would require a high expansion in chemical fertilizer production.[27] According to official estimates, China would require a minimum of 20 million tons of nitrogen fertilizer, and a large amount of phosphorus and potassium fertilizer annually.[28] The table below indicates that China's domestic production of chemical fertilizer is far short of desired amounts.[29]

Year	Domestic Production	Imports	Total
	(in metric tons)		
1952	194,000	139,000	333,000
1953	273,460	470,000	743,460
1954	360,580	650,000	1,010,580
1955	426,000	794,000	1,220,000
1956	663,000	1,336,000	1,999,000
1957	763,510	1,150,000	1,913,510
1958	984,310	1,500,000	2,484,310
1959	1,333,000	1,000,480	2,333,480
1960	1,675,000	786,806	2,461,806
1961	1,431,000	1,000,000	2,431,000
1962	2,050,000	1,150,000	3,200,000
1963	2,600,000	1,700,000	4,300,000

Analysis of these data indicates that a great deal of recent emphasis has been placed on fertilizer production. The average

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[27]Owen L. Dawson, "China's Two-Pronged Agricultural Dilemma," Current Scene - Developments in Mainland China, Vol. III, No. 20, June 1965, p. 5.

[28]Cheng, op. cit., p. 170.

[29]Wu and others, op. cit., p. 34.

annual increments of increased fertilizer production are shown below.

Period	Thousands of Tons
1952-55	77
1955-58	186
1958-60	345
1960-63	585

Chemical fertilizer imports increased well over 10 times in the years from 1952 to 1963. China imports approximately 0.4 of all the fertilizer used annually at a great expenditure of capital vitally needed for industrialization.

The 1964 chemical fertilizer production was reported as 3.5 million tons,[30] and the 1965 estimated production was 4 million metric tons.[31]

In spite of China's efforts and determination to increase fertilizer utilization, the average amount used per acre in 1964 was only 1/20 of the annual quantity used in Japan in the 1950's.[32]

Mr. Dawson makes a very comprehensive analysis of China's minimum fertilizer requirements by 1972 based on (1) minimum daily caloric availability from food grains, as established by the Chinese Medical Association in 1939, (2) population increase, (3) Chinese-estimated increased arable land, (4) the established

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[30]Colina MacDougall, "China: Fertilizer Industry," Far Eastern Economic Review, Vol. XLIX, No. 1, July 1965, p. 15.

[31]Dawson, op. cit., p. 13.

[32]Chao, op. cit., p. 174.

increased fertilizer production rate 1962 through 1964, and (5) the estimated required increased grain production based on 1962-63 figures. He calculated that an additional 24 million tons of grain must result from use of chemical fertilizer alone. Based on comparisons of harvest rates with fertilizer used per acre in Japan and Taiwan, he determined that China would need, at a very minimum, 15 million tons of fertilizer annually by 1972 to increase its harvest per acre to an amount comparable to Japan's and Taiwan's. He further estimated that, if she continued to increase fertilizer production at the rate established in 1962-1964, China still would fall short of the desired goal by approximately 7.5 million tons annually.[33] He further pointed out that poor crop years caused by adverse weather will cause lower grain production with a commensurate loss in the diet.

The importance of increasing the use of fertilizer to improve grain production is obvious when the results produced amount to an approximate ratio of 2:1. That is, one ton of fertilizer will produce an additional two tons of grain from the same paddy area.[34]

China's efforts to increase fertilizer production has resulted in the building of new plants as well as the

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[33]Dawson, op. cit., pp. 6, 7, 13.

[34]Yuan-Chi Tang, A Study on the Development of China's Fertilizer Industry, p. 17.

modernization of old ones. The capacity of these plants varies from the 420,000-ton per year ammonium sulphate plant at Dairen to the numerous plants capable of approximately 1,000 tons annual production. A distinctive contribution to fertilizer production in the last several years has been the establishment of smaller plants in the flourishing farm land areas to eliminate transportation problems.[35]

The Chinese Government claims to have put 28 new, large, and medium sized chemical fertilizer plants in operation in the first half of 1965 with countryside utilization increasing by 1.6 million over the same period in 1964.[36] China also claims to have increased fertilizer production to over 2 million tons during the first 4 months of 1965. These figures would indicate that China will produce approximately 6 million tons of fertilizer during 1965. However, according to estimates made by observers in Hong Kong and as compared to earlier official Chinese claims, this figure seems very high and exaggerated, as is so often the case.[37] The noted Chinese economist, Professor Wu, estimates the present Chinese chemical fertilizer production rate at a level of 4 million tons annually.[38]

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[35]MacDougall, op. cit., pp. 14-15.

[36]Colina MacDougall, "Thick and Fast," Far Eastern Economic Review, 12 Aug. 1965, p. 302.

[37]MacDougall, China: Fertilizer Industry, p. 16.

[38]Yuan Li Wu, "Communist China's Economy: Critical Questions," Current History, Sep. 1965, p. 167.

A new emphasis has been placed on exploration for phosphate rock, pyrites, and other ores to support the increased requirements for fertilizer production. In February 1965, it was announced that new phosphorus mines had been opened in Hupeh which would produce 400,000 tons of ore a year.[39] It also was announced that China is exploiting large phosphatic rock deposits in southwest China.[40]

To put the raw materials into a usable end product will require a tremendous development of hydroelectric power at considerable expense to operate the plants necessary to increase fertilizer production substantially.[41]

If China is to produce the 15 to 20 million tons of fertilizer required annually by 1972, based on her present optimistic capability of approximately 6 million tons annually, she will need an additional annual capability of 9 to 14 million tons. One economist proposes that a chemical fertilizer plant with an annual production rate of 1 million tons would require an investment of $100 million and about a 5-year construction period. Therefore, construction of 9 to 14 plants, each with an annual capacity of 1 million tons, must commence now to be producing by the time frame 1972. Such construction would require a total

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[39]MacDougall, "China: Fertilizer Industry," p. 16.
[40]MacDougall, "Thick and Fast," op. cit., p. 302.
[41]Dawson, op. cit., p. 7.

allocation of approximately $900 million to $1.4 billion for this special purpose alone.[42]

Since this capacity will require some years to realize, China continues to search the world market for commercial fertilizer. In June 1965, a Chinese delegation affirmed its willingness to buy chemical fertilizer from Kuwait. A new fertilizer plant, reported to be the largest in the world, is under construction in Kuwait and will commence production in March 1966. By using previously wasted natural gas, it will produce extremely cheap fertilizer. China has agreed to buy its total production, which is expected eventually to rise to 3 million tons a year.[43]

China, reportedly, has contracted with Japan for the importation of approximately 2 million tons of chemical fertilizer.[44] Additionally, she is negotiating with West Germany, France, and Hong Kong for continued imports of chemical fertilizer.[45] If China feels compelled to import chemical fertilizer in the amount of 4 to 7.5 million tons per year, at $50 a ton,[46] the cost to the government will be from $200 million to $375 million per year.

In addition to the elements of time, cost, and the drain on scarce foreign exchange for acquisition of necessary chemical fertilizer, the internal problems of distribution confront the

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[42]Cheng, op. cit., p. 168.

[43]Colina MacDougall, "Sheiks and Marxists," Far Eastern Economic Review, 24 June 1965, p. 626.

[44]Dawson, op. cit., p. 8.

[45]Wu, "Communist China's Economy:," op. cit., p. 167.

[46]Wu and others, op. cit., p. 78.

regime. The distribution to millions of farms in the vast area of China would be a formidable feat. Such a movement by water, rail, and trucks would demand a large part of the present limited transportation capacity, and would require construction of an improved and extended highway network. (See transportation chapter for present capabilities.) Distribution to main storage points, then to smaller depots, and finally to the millions of farms involved would require a vast organization and would mean attendant losses. Direction of usage on the farms would pose an additional problem.[47]

Therefore, it appears that China is committed to increased fertilizer production to increase food productivity for an ever expanding population. However, the implication of importing ever larger amounts of chemical fertilizer along side attempting to increase fertilizer production is enormous. The capital spent for foreign chemical fertilizer undoubtedly will contribute to the disruption of China's plans to become an industrial power.

IRRIGATION

The regime also considered that an expanded irrigation system in China would be an effective and suitable approach to stabilizing and raising agricultural productivity. With a well developed irrigation system and moderate droughts, water logging

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[47]Dawson, op. cit., p. 7.

could be prevented, and farm production could be more or less independent of the vicissitudes of weather conditions. The development of irrigation networks also could convert low yield land into a high yield area. However, to provide an adequate supply and regulated use of water for normal crop growth and to use chemical fertilizer effectively would require huge financial outlays.

China was aware of the need for water conservation in its food production in the 1930's.[48] This awareness was emphasized by the Communists who immediately devoted much attention to this field, particularly since it would be largely effected through mass application of labor underemployed in agriculture. In 1949, a particularly bad year, about 20 million acres were flooded; and in 1951, which can be considered a rather favorable harvest year, about 4 million acres were ravaged by floods. Floods and droughts have been the major causes of famine throughout Chinese history.[49]

The Communists began by rehabilitating much neglected irrigation works as well as starting vast new construction projects. In the South of China, repair and construction of small ponds, reservoirs, and tanks was undertaken. In the north, wells are more important and were repaired and constructed on a large scale. Diesel and electric pumps were installed in a number of provinces to convert a large area into wet land with irrigation

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[48]Dawson, op. cit., p. 8.

[49]W. W. Rostow, The Prospects for Communist China, p. 269.

facilities. In 1953, 23 major water conservancy projects were completed. The Chinese claimed to have built more than 300 major projects, about 10 million minor projects, and over 5.6 million wells by 1955.[50] One such program is the Yellow River project that claims to provide effective irrigation for some 6.6 million acres of potentially rich farm land.[51]

The net irrigated area in China increased from 50 million acres in 1949 to 64.5 million acres in 1955. By 1958, approximately 160 million acres were under irrigation of one sort or another.[52] Another source claims that approximately 150 million acres were under effective irrigation in 1962-63.[53]

The high priority placed on water conservancy was indicated when the government mobilized 100 million peasants to work on the project in the winter of 1957 and the spring of 1958. However, this great project was poorly engineered. Poor drainage resulted, and underground water levels were raised above critical points, turning good soil alkaline or swampy. The excessive stored water rendered areas vulnerable to floods with abnormal rainfall.[54]

Haphazard and rash handling of water conservancy during the first 3 years of the Big Leap Forward, (1958-60), contributed decisively to the deterioration of water and soil conditions. The terrible droughts of 1959-60 occurred almost immediately

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[50]Helmut G. Callis, China, Confucian and Communist, pp. 101-03.
[51]Felix Greene, Awakened China, p. 367.
[52]Chang-tu Hu, op. cit., p. 351.
[53]Wu and others, op. cit., p. 23.
[54]Chao, op. cit., p. 173.

following the construction of millions of small canals and reservoirs in 1957-59. The Chinese Communist governmental records of the expansion of irrigation and water conservation work and the increase of calamity-affected areas keep pace almost proportionally. This official data illustrates that before the grand-scale water conservation work of 1956, the calamity-affected areas never exceeded 30 million acres. After the 1956 mass water conservancy projects were conducted, the areas suffering from flood and drought increased proportionally, from 38 million acres in 1957 to 78 million acres in 1958, 108 million acres in 1959, and 150 million acres in 1960.[55]

The affected areas were universally predominant in all of China, and the situation became so critical that the Party leadership, through an editorial in the People's Daily in 1961, noted:

> According to an investigation of nine irrigation areas in North China made by the CCP Central Committee and the Agricultural Ministry of the State Council, of irrigation work in this area only 56 per cent was effective. Most of the water reservoirs completed only their main body without building channels, control gates and ditches. This is not only useless in agricultural production but it also raised the underground water level and turned much good soil into alkaline or swampy soil."[56]

The regime practically ceased building new irrigation projects for 2 years after 1959 but concentrated on improving and

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[55]Cheng, op. cit., pp. 142-143.
[56]Ibid., p. 143.

repairing the old systems. However, 1963-64 again found the Government launching into a large-scale program of building irrigation projects. Even as late as September 1965, 40 percent of the projects did not function properly and were affecting agricultural productivity.[57]

The regime is putting emphasis on pumping water through pipes to reduce the land-consuming ancient method of gravity supply. This antiquated system of ditches and canals consumes approximately 10 million acres, or 3.6 percent of the cultivated land in China, whereas the modern system will use only 1/15 that amount of land. A pumping well can extract water at the point where it is needed from a large underwater basin, which is less affected by seasonal variations, and can more effectively meet the water requirements.[58]

The Chief Soviet Expert at the National Conference on Water Conservancy and Hydroelectric Power, held in Peiping in early 1959, pointed out that only 800 of the 2,680 cubic kilometers of water available annually was needed in 1960. Although the total supply (primarily from large rivers) is more than adequate for China's needs, the distribution of water is very uneven. Statistics of the Yellow River Water Conservancy Commission showed the southern part of the country has 75 percent of the country's total resources but only 38 percent of the cultivated area. The

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[57]Chao, op. cit., p. 173.
[58]Ibid., p. 174.

North (excluding the Sungari River area) has only 7 percent of the total water resources but 52 percent of the cultivated land. The great cotton and wheat belt of the Yellow River, and Hwai River Valley, the Hai Ho, and the Liao River Valley are thought to be particularly short of moisture, and are often affected by water shortages. Future development must depend, to an important extent, on the limited supplies of underground water.[59]

Data on underground water supplies are meager and conflicting, but M. M. Krylov, a Soviet specialist on underground water in China, indicated:

1. That the Chinese People's Republic intends to increase irrigated land from underground water by 100 percent by 1967.

2. Such a requirement would necessitate a colossal volume of water with a discharge half again as much as the annual discharge of the Yellow River.

3. Such plans depend on artificial control of the subsoil waters by a complex system of ameliorative measures.

4. Much work has to be done yet in channeling off the subsoil water in certain areas of China by the construction of a water-catchment and drainage network within the complex framework of agrotechnical and hydrotechnical ameliorative operations.[60]

It is apparent that the extensively expanded use of underground water for irrigation entails large-scale planning and the

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[59]Dawson, op. cit., pp. 8-9.
[60]Ibid., p. 9.

installation of a highly expensive complex system. Up to this point, the cost of irrigation work has been minimal, since the majority was undertaken by mass labor with little capital outlay.

Official estimates of the potential expansion of irrigated areas are considered in the broad estimates to be approximately 50 million acres. It would take a long time to develop this potential, including diverting surplus water from the Yangtze to the Yellow River Basin. This would be a major undertaking with gigantic engineering problems. It probably would take a few decades before results would be evident.[61]

It is extremely difficult to calculate the annual increased grain production that could be achieved by expanded irrigation, as the additional land to come under irrigation annually is not known. It is very evident that the irrigation plans are not progressing rapidly enough to cope with the country's needs. The cost of expanding the irrigation system to include the potential 50 million acres discussed above, is impossible to estimate. However, official statistics have shown that from 1950 to 1956, the government allocated $871 million for this high priority program. Over one million men were conscripted to work on the projects, and the money spent on it has been increasing year by year.[62]

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[61] Ibid., p. 11.
[62] Kao, op. cit., pp. 39-40.

Completion of the irrigation projects is not considered possible in the next 15 years, in spite of its high priority, due to the tremendous drain on limited capital and the gigantic engineering scope involved.

ELECTRIFICATION

Electrification has been highly publicized in China, as an important measure to transform the country's agriculture. Electric power is used in rural China primarily to process agricultural products, especially for rice husking and flour grinding, and to prepare fertilizers and animal feed. The use of electricity for irrigation, and drainage is increasing, but still not widespread.[63] The total area of land irrigated by electricity amounted to approximately 15.8 million acres, or about 16 percent of the total area irrigated by all means.[64]

The emphasis placed on electrification of agriculture has produced a marked increase from 16 million kilowatt hours in 1949 to 836 million kilowatt hours in 1960. This marked increase in usage by some 5,226-fold, using 1949 as a basic year, still represented only 1.7 percent of the total 1960 electrical consumption in China.[65] A further increase in electric power

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[63]Ming, op. cit., pp. 141-142.

[64]Wu and others, op. cit., p. 25.

[65]Yuan-li Wu, Economic Development and the Use of Energy Resources in Communist China, pp. 83, 84, 85.

consumption in rural areas was shown as 1 billion kwh in 1962, with a total consumption of 1.75 billion kwh in 1964.[66]

The majority of the electrification effort in agriculture was devoted to improving the irrigation capability through the installation of electric pumps. Power supply in Communist China is concentrated in the major cotton and grain-producing areas around the larger cities. The advantage of electrification in irrigation and drainage will have to be confined to these areas for some time.[67]

The exact cost figures for past agricultural electrification are not readily separable from total figures, nor are estimates for further expansion available. However, it may readily be assumed that the Chinese Government, in attempting to increase food production, will continue to emphasize the electrification priority, since it is tied very closely to irrigation. Any improvement in this field also will require outlay of capital to build power plants, substations, and power lines and for electric motors and associated equipments.

LAND UTILIZATION

A more effective utilization of available arable land, as well as bringing new land under the plow, could have a significant effect on total agricultural productivity.

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[66]Chao, op. cit., p. 172.
[67]Wu and others, op. cit., p. 72.

About 60 percent of China's land is above 6,600 feet, and cannot be considered suitable for agriculture. Another 20 percent is relatively unsuitable because of topographic or climatic limitations. In 1953, it was estimated that approximately 9 percent of the total area, or about 250 million acres of wasteland, is suitable for reclamation. Only slightly over 4 percent of this area had been reclaimed by 1960.[68]

The remainder of China's total area that lends itself to cultivation is one of China's most valuable possessions, since it represents its only source of food for its rapidly expanding population. This land amounts to 267 million acres of arable land[69] and comprises approximately 11 percent of the total land area of the country.[70] It is land that, for the most part, has been worked by the Chinese peasants for a thousand years or more. It is subject to climatic conditions ranging from subtropical summers to temperate zone winters and menaced by drought, typhoon, river flooding, and other natural calamities of every description.[71] This same land, plagued with the inefficiencies inherent in small sized farms, was becoming more inefficient by continuous fragmentation of land holding. It resulted from population pressure, lack of nonfarm employment opportunities, and China's

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[68]Hu, op. cit., p. 335.
[69]Wu, The Economy of Communist China, p. 44.
[70]Hu, op. cit., p. 336.
[71]US Dept of Agriculture, Communist China's Agriculture, p. 4.

age old inheritance practices which provide for splitting up land among all surviving sons.[72] Surveys conducted in the early thirties indicate that the average-sized farm of about 3.2-3.3 acres was broken up into close to six distinctly separated parcels. Such fragmentation resulted in approximately 36 percent of the farms to have under 1.5 acres and 25 percent between 1.5 and 3.0 acres.[73] The only way these small and highly fragmented holdings could maintain a densely settled population is by exceedingly intensive land use and double cropping on nearly two thirds of the cultivated area. This practice is particularly widespread in the irrigated rice area in the South, where two or more crops are planted on about three-fourths of the farm area, as compared to only 7 percent in the wheat region of the north. The very high intensity of land use in China also is illustrated by the fact that in all regions about 90 percent of the farm area is in crops, while only about 1 percent is in pastures, as compared with 40 percent or more in the United States.[74]

Natural cover on noncultivated areas has been so reduced after centuries of maximum use that the water-holding capacity of the soil is extremely poor. This contributes to excessive runoff and flooding of crop lands.[75] The overworked, poorly

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[72]Alexander Eckstein, Conditions and Prospects for Economic Growth in Communist China, p. 8.

[73]J. L. Buck, Land Utilization in China, pp. 181-185, 267-273.

[74]Eckstein, op. cit., pp. 8-9.

[75]Valentin Chu, "The Famine Makers," The New Leader, 11 June 1962, p. 13.

fertilized land was required to produce the same type of crops year after year without benefit of crop rotation or the opportunity to lay fallow. China continues to depend, in general, on manual labor using centuries old, inefficient farming tools and methods.[76] Added to the already complex agricultural problem is the fact that the tremendous population is particularly dense where the land is arable.[77]

The ancient custom of placing the burial plot on the family holdings results in the loss of almost 2 percent of all the farm land in China.[78] As noted earlier, the antiquated irrigation system results in another 3.6 percent loss of usable farm land.

High intensity use of land and age-old soil conservation and irrigation practices produced fairly high crop yields per acre, but they lagged considerably behind the yields attained in present day Japan. This would tend to suggest that crop productivity in China has been pushed as far as traditional practices and methods will permit. Therefore, large improvements in farm output can be attained only through the introduction of technology and improved farming practices from abroad.[79]

The Chinese Communists attempted to solve the fragmented, small farm problem of the countryside through collectivization of agriculture under "communes." By the fall of 1958, 98.2 percent

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[76]Union Research Institute, Communism in China, p. 118.
[77]Chu, op. cit., p. 31.
[78]Buck, op. cit., p. 10.
[79]Eckstein, op. cit., pp. 9-10.

of the rural households had been collected into 26,425 communes.[80] Although the collectivization of agriculture was intended to increase productivity, peasants resisting the regimentation of communes secretly slaughtered and ate work animals, stole grain, and sabotaged party cadres trying to carry out directives from Peiping.[81]

The Communist regime recognized China's shortcomings and included remedial action in its Twelve Year Plan to increase land utilization. Such actions embraced efforts to increase total acreage under cultivation, reclamation of waste lands, increased acreage under irrigation, implementation of measures to improve the soil, reforestation, extension of areas capable of multiple crops, and improvement of farming methods.[82]

Implementation of a good soil management program by the government through dense planting and deep plowing produced results opposite to those desired. Instead of the expected increase in agricultural productivity, an overall loss was experienced.[83]

The government has undertaken large scale afforestation programs to develop timberlands and to establish water shelter

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[80]Ralph W. Phillips and Leslie T. C. Kuo, "Agricultural Development in Communist China," International Development Review, Vol. III, Feb. 1961, p. 19.

[81]"Red China: 'Paper Tiger?'," U. S. News and World Report, 25 Oct. 1965, p. 44.

[82]T. J. Hughes and D. E. T. Luard, op. cit., p. 181.

[83]Phillips and Kuo, op. cit., p. 21.

belts. Some 111 million acres are reported to have been afforested in 1949-59,[84] at minimal capital outlay, since cheap labor was used.

The one most promising area in land usage is reclamation of waste land. According to official estimates, there are still 250 million acres of arable but uncultivated land in China. This virgin land is located chiefly in the frontier region, where communications are poor and weather conditions unfavorable, and the cost of reclaiming this vast area probably is prohibitive. One economist calculated that reclamation of one acre of virgin land requires $180 capital expenditure. Therefore, to bring the 250 million acres of virgin land under cultivation would cost the regime a total investment of $44 billion.[85] An undertaking of such magnitude requiring a vast amount of capital is impractical, if not impossible, at this time.

Therefore, it appears that increased land utilization with a resultant increase in productivity will take place at a very slow rate and require a long time to complete.

GRAIN PRODUCTION

The previous discussion has considered efforts of the People's Republic of China to improve its agricultural productivity to feed its exploding population and, if possible, build up a surplus commodity.

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[84]Hu, op. cit., p. 350.
[85]Cheng, op. cit., p. 169.

The importance of using grain production in China as an index of China's progress was very well stated by one Chinese writer:

> From the standpoint of social demand and daily necessities, agriculture is the foundation for the development of national economy, and grain is the foundation of all foundations. Grain not only constitutes the staple food for the people, but also constitutes the material foundation for the development of economic crops and animal husbandry. Therefore, in arranging agricultural production, we must make the production of grain the guiding index.[86]

A number of researched sources produced conflicting statistics on annual grain produced and, to further complicate the situation, no official agricultural production figures have been issued since 1959 when the regime began to realize the futility of the Great Leap Forward and the inflated figures as presented by lower-echelon officials. However, the following grain production figures appear to be the most reliable and realistic:[87]

Year	Grain Production (In Millions of Metric Tons)
1952	154
1953	157
1955	174
1957	185
1958	193
1959	168
1960	150
1961	165
1962	182

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[86]US Joint Publications Research Service, Master and Improve the Economic Effect of Agricultural Productivity, No. 13700, Washington, 9 May 1962, p. 44.

[87]Edmund Clubb, "The International Position of Communist China," The Hammerskjold Forums, pp. 16-17.

The 1963 production was reported at 183 million metric tons by one source and 179 million metric tons[88] by another. The 1964 output was claimed to have surpassed the 1957 level and is, therefore, assumed to be within the range of 190-195 million metric tons.[89] The 1965 harvest has prospects of being good. Reports in Food Grain Harvest 1965 indicate that the harvest in most cases is equal to the 1964 level and in some cases exceeds this level by 10-20 percent.[90] If this is the case, and the 1964 level is maintained, it will be the fourth consecutive reported good harvest. However, in spite of the reported favorable harvests, China has imported grain for the past 5 years to the extent of 5.6 million tons in 1961, 4.7 million tons in 1962, 4.3 million tons in 1963,[91] 6.4 million tons in 1964[92] and about 6 million tons in 1965.[93] The cost of 1964 grain imports alone used up almost 40 percent of the convertible foreign exchange Red China earned from exports in 1964.[94] China also signed a 3-year contract with Canada in 1963 for undisclosed amounts of food grains,[95] which indicates that hard times still lie ahead.

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[88]"China's Economy and Its Prospects," op. cit., p. 167.

[89]Chao, op. cit., p. 170.

[90]"Foodgrain Harvest," China News Analysis, No. 587, 5 Nov. 1965, Entire bulletin, and Dawson, op. cit., p. 369.

[91]Wu and others, op. cit., p. 41.

[92]"Just How Much of a Threat is Red China?," U. S. News and World Report, 22 Feb. 1965, p. 41.

[93]"Red China: Paper Tiger," U. S. News and World Report, 25 Oct. 1965, p. 44.

[94]"Just How Much of a Threat is Red China," op. cit., p. 41.

[95]Hwang, op. cit., p. 8.

Importation of grain at $60 per ton,[96] for the past 5 years represents an expenditure of approximately $1.6 billion that could have been spent for agricultural or industrial base improvement.

It has been estimated that some 200 million tons of grain were required to feed China's population when it totaled 700 million people.[97] In 1963, when she was estimated to have 700 million people, China imported over 4 million tons of foodgrains during a fair harvest year. Grain again was imported in 1964, considered to be one of the best production years in China, a year during which many local cadres expressed the opinion that China had reached the physical maximum production level possible under present conditions.[98] Fully a third of Peiping's convertible foreign exchange is spent on grain each year.[99] This situation is not likely to improve, since an exploding population requires more food grain for subsistence. It is estimated that with every increase of 100 million in population another 30 million tons of grain is required.[100] The Chinese Communist authorities are well aware of the existence of a grain shortage and the increasing food requirements, as witnessed by the recent disagreement over the 1966 grain-for-sugar contract with Cuba. A 9 January 1966 statement by Peiping refused to increase the

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[96]Wu and others, op. cit., p. 78.
[97]Clubb, op. cit., p. 17.
[98]Chao, op. cit., p. 172.
[99]"The World-Asia," Time, Vol. 85, 26 Feb. 1965, p. 29.
[100]Cheng, op. cit., p. 170.

1966 rice shipment to Cuba but "offered 135,000 tons or the same level as 1964 because China still did not have enough grain to meet its domestic needs."[101]

SUMMARY

Professor Wu stated the dependence of China's economic recovery on the agricultural base very succinctly:

> It is conceivable that because of the needs of the agricultural sector, the availability of exchange may become the effective constraint to the import of industrial equipment and raw materials other than those destined for the agricultural sector. Consequently, success in agricultural recovery may become a prerequisite of economic growth in general. The alternatives of importing food would be even more expensive unless large nonagricultural exports can be developed. Such development, however, cannot be expected to take place without further industrial expansion, which is precluded by assumption in the absence of greater growth in agriculture.[102]

This greater growth in the agricultural sector was time-phased when the regime stated a new goal for completion of technical transformation of agriculture in an editorial in the Peoples Daily on 22 October 1962. The editorial pointed out that the regime realized that it would take 4-5 five year plans, that is, 20-25 years to complete the technical transformation of agriculture throughout the country.[103] Such a transformation will be completed only at a great cost to the Chinese economy.

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[101]Bob Uchima, "China Raps Castro Over Rice Deal," Washington Post, 10 Jan. 1966, pp. 1 and A8.

[102]Wu, The Economy of Communist China, op. cit., pp. 155-156.

[103]Hwang, op. cit., p. 3.

In summary, the agricultural problem not only is of prime importance to China today, but will be one of continuing and increasing concern for years to come.[104] It appears that the regime must direct an increasingly greater amount of investment into agriculture and initiate new methods to increase productivity of arable land. Only by increasing her per acre output manyfold, can China hope to meet the food requirements of her people, let alone create surpluses for export.[105]

If remedial actions truly proportionate to China's agricultural needs are taken, many other plans and programs initiated by the regime will have to be reduced seriously or abandoned. China's assets do not appear to be sufficient to accomplish all that is required in agriculture and other sectors without outside assistance.[106] Such outside help is not visible on the horizon, nor does it appear possible for China to achieve the necessary successes required to overcome her grave agricultural problems within the next 15 years.

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[104]A. Doak Barnett, Communist China in Perspective, pp. 63-65.
[105]"Red China," Time, 11 Jan. 1963, p. 32.
[106]"Behind China's Strange Moves," US News and World Report, 10 Dec. 1962, pp. 52-54.

CHAPTER 3

INDUSTRY

In 1949 when the Communist regime gained full control of the mainland, Chinese industry was at a very low level of production and in very poor condition after 25 years of war and internal strife. Nevertheless, the Communist leaders were convinced that China must follow the example of the Soviet Union in industrialization. They embarked on a program for creation of a heavy industry based on steel, machine tools, coal, electric power, and base metals.[1] By the end of 1952, the output of state-owned industrial enterprises increased from 36.7 percent of the nation's total industrial output in 1949 to 61 percent in 1952. Chou En-lai stated the regime had stabilized the Chinese economy in the first 3 years and now was prepared for a more comprehensive and rigidly controlled program of industrial development.[2]

A very ambitious program was initiated for the period 1952-1957 and proved to be very successful, as the following table of figures for selected industries will indicate:

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[1]Albert Ravenholt, "Red China's Sagging Industry," American Universities Field Staff Reports, p. 11.

[2]T. J. Hughes, and D. E. T. Luard, The Economic Development of Communist China, pp.30-31.

Industry	1952 Production	1957 Goal	1957 Production
		(in thousands of units)	
Crude steel	1,350 M/T	4,210 M/T	5,350 M/T
Coal	63,528 M/T	112,985 M/T	130,730 M/T
Crude oil	436 M/T	2,012 M/T	1,460 M/T
Electric energy	7,260,000 KWH	15,900,000 KWH 3/	19,340,000 KWH 4/

It was these successes that caused the Communists to increase the industrial production goals for the next 5-year period by 52 percent.[5] This period was to be known as the Great Leap Forward and was destined to suffer a severe setback. The failure of the Great Leap Forward had not taken an immediate toll on industry by 1960, so more success was to fall to the Communists as the following chart indicates:[6]

Industry	1960 Production (in thousands of units)
Crude steel	18,450 M/T
Coal	420,000 M/T
Crude oil	3,700 M/T
Electric energy	41,500,000 KWH

The regime had put all its efforts in one direction by depending on good agricultural production years to support a heavy expansion of industry. Peiping had published an official report stating that

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[3]Calvin Suey Kew Chin, A Study of Chinese Dependence Upon the Soviet Union for Economic Development, p. 54.

[4]United Nations, Statistical Year Book, 1961, pp.134, 138, 247, 303.

[5]Gyan Chaud, The New Economy of China, p. 145.

[6]United Nations, op. cit., pp.134, 138, 247, 303.

agriculture supplied about 40 percent of the raw materials for all industries and about 60 percent for light industry. Thus, crop failure would result in a serious shortage of raw material and greatly handicap industrial production. The 3 years of crop failure in 1959-61 caused that shortage of raw materials and seriously curtailed industrial production.[7]

The decline in industrial capability in Communist China, as a result of the Great Leap Forward, necessitated a drastic shift in industrial policies by the Communist leaders. These new policies deemphasized industrial development for its own sake and assigned high priorities to industries making products urgently needed for stepping up agricultural production. Farm machinery and tools, chemical fertilizers, and electricity were accorded first preference. Likewise favored were iron and steel, coal, petroleum products and other items which serve either as raw materials or as fuel for farm equipment, chemical fertilizer, and electric power plants.[8]

After 1960 a serious downturn in industry resulted from (1) agricultural crisis, (2) chaotic conditions and technical confusion from overextension of the Great Leap Forward, (3) withdrawal of Soviet technical assistance, (4) shortage of raw material and fuel, (5) lack of coordination among different sectors of economy, (6) low quality and insufficient variety of industrial products, and (7) high cost of production and low labor productivity.[9]

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[7]Wu and others, The Economic Potential of Communist China, p. 55.

[8]Ibid.

[9]Ibid., p. 62.

When the full impact of the crop failures of 1959 and 1960 hit industry, China came to an industrial standstill. Many plants were closed completely, and others operated at one-half or one-fourth of capacity.[10] Taipei reported that 62.3 percent of the industrial and mining concerns in Communist China were completely or partly idle, by June 1962, because of serious raw material and fuel shortages.[11] Raw materials shortages extended to every category of industry from textiles to the manufacture of copper wire. The Great Leap Forward period caused overtaxed machinery to be left in a severe state of disrepair, with the existence of a grave shortage of spare parts.[12]

Coal production slumped to an estimated 240 million tons in 1962.[13] P I-po, Communist Chairman of the Commission on state economics in China, stated in 1962 that the production of the extracting industries, especially of the ferrous metals, coal, and petroleum, have become a strikingly weak link in heavy industry production.[14] It was estimated that steel production dropped to 7 million tons in 1962.[15] Petroleum production was dealt a hard blow by the withdrawal of Soviet technicians and the nonavailability of strategically needed production equipment formerly imported from the USSR. The serious shortage of petroleum has been manifested by cancellations

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[10]"Just How Much of a Threat is Red China?" US News and World Report, Feb. 22, 1965, p. 42.

[11]Wu and others, op. cit., p. 69.

[12]Ravenholt, op. cit., pp. 24 and 25.

[13]Edmund Clubb, "The International Position of Communist China," The Hammerskjold Forums, p. 18.

[14]Wu and others, op. cit., p. 64.

[15]Yuan Li Wu, The Economy of Communist China, p. 123.

of airline and bus schedules all over the Chinese mainland since 1959. Training flights in the air force had been reduced from 120 sorties per day in 1959 to 100 in 1960, 55 in 1961, and a precarious low of 30 during the first half of 1962. Although the situation has improved slightly by 1965, shortages of petroleum will remain a problem for Communist China for some years to come.[16] However, if her claims of newly discovered vast reserves of petroleum (chapter 6) are in fact true, this picture may improve sooner than anticipated. This improvement will be realized only after much capital has been spent to develop the industry.

Considerable waste through poor planning continues to plague Chinese industry. Lack of adequate transportation facilities has further intensified the problems of product distribution, as well as raw material distribution. An imbalance of investment within the industrial sector has resulted in a bottleneck between the capacities of raw material producing plants and processing and finishing plants. Low and nonuniform quality of industrial products, although improved since 1962, continues to haunt China's industry. Communist China's inability to produce a large variety of high-quality precision products for industrial uses forces her, with very limited foreign capital, to rely heavily on imports. Lack of technical knowledge and managerial skill among the party cadres

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[16]Wu and others, op. cit., pp. 65 and 66.

assigned the responsibility of supervising industrial operations causes considerable work stoppages, waste, and inefficiency.[17]

The 1963 production had not shown a tendency toward recovery as witnessed by the following figures: steel 8 million M/T, coal 210 million M/T, petroleum 6 million M/T, and electricity 31 billion kwh.[18]

During the First Session of the Third National People's Congress which adjourned in January 1965, Chou En-lai made a report on "The Work of the People." He reported that the entire economy in Communist China has taken a turn for the better. He reported that industrial output in 1964 increased by more than 15 percent over 1963 and was higher than 1957. He reported that coal, steel, and petroleum production, among others, had increased by over 20 percent of 1963 production.[19]

Such an increase indicates industrial progress is being made in China, but very slowly, since a 20 percent increase over a very low production year is a minor change indeed.

Chou's reporting of increases in 11 of the many industrial products is a good indication of the instability, imbalance, and low output in the remainder of industrial production.[20]

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[17] Ibid., p. 66-68.

[18] US Agency for International Development. Statistics and Reports Division. Economic Data Book for the Countries of Europe, p. 42.

[19] P. Lin, "Trend in Communist China's Economic Policy," Free China and Asia, Vol. XII, No. 4, Apr. 1965, p. 4.

[20] Ibid., p. 5.

The economic policy laid down in the People's Congress emphasized (1) correct handling of relations between agriculture, light industry, and heavy industry; (2) the better implementation of the guiding principle of treating agriculture as the foundation and industry as the leading factor; and (3) the acceleration of development of heavy industries, particularly basic industries.[21]

The trend remains that industrial development will support agriculture primarily and that industry itself is far from attaining its goal. A number of the adverse factors still persist in China, as a result of the industrial collapse from 1960 to the middle of 1962, and will require many years to overcome. Since industry must depend on agriculture to provide accumulated capital with which to build, industry has little with which to develop itself.

Communist China still is driving very hard to fight its way back to 1959 production levels.[22] She continues to use the meager supply of foreign exchange to import industrial plants, primarily to improve her industrial capability in support of agriculture. China recently made deals with Britain for an ammonium-making plant; France for several petrochemical and artificial fertilizer plants; Holland for a urea making plant; Italy for 3 oil refineries, steel pipes, and chemical plants; and Germany for petroleum refining plants.[23]

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[21] Ibid.

[22] US News and World Report, "Just How Much of a Threat is Red China?" 22 Feb. 1965, p. 42.

[23] "What to Expect Next From Red China," Nation's Business, Oct. 1965, p. 86, and "Business Around the World," US News and World Report, 30 Aug. 1964, p. 78.

Some experts believe it will take Communist China until 1970 or 1972 just to regain the level of industrial production reached in 1960.[24] Therefore, it seems very unlikely that China will become an industrial giant by 1980.

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[24]"Behind China's Strange Moves," US News and World Report, 10 Dec. 1962, pp. 52-54.

CHAPTER 4

DEMOGRAPHY

When the Communists gained control of mainland China, the population was over 500 million.[1] However, prior to that time, estimates of the population of China ranged from 375-468 million people.[2] The total lack of dependable figures made it clear to the regime that it would require accurate population statistics in preparation for launching the First Five Year Plan.[3] As a result, the first official Communist census was taken in 1953 and reflected a total population of 582.6 million as of 30 June of that year.[4] The Chinese released the following breakdown of age groups associated with the 1953 census:[5]

Age	Distribution (in percent)
Under 5	15.6
5-9	11.0
10-14	9.2
15-19	8.9
20-24	9.8
25-29	9.5
30-34	8.0
35-39	6.7
40-44	5.6
45-49	4.5
50-54	3.5
55-59	2.7
60-64	1.0
65-69	1.3
70 and over	1.7

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[1]Robert A. Cook, "China: A Demographic Crisis," Population Bulletin, Vol. XIX No. 5, Aug. 1963, p. 109.

[2]W. A. Douglas Jackson, "The Chinese Population Problem," Current History, Sep. 1962, p. 156.

[3]Felix Greene, Awakened China, p. 418.

[4]US Department of Commerce, Bureau of the Census, The Size, Composition and Growth of the Population of Mainland China, Series P.-90, p. 98.

[5]W. S. Thompson, Population and Progress in the Far East, p. 207.

It can readily be seen from these figures that the bulk of the Chinese people are in the younger age groups, representing a great potential of healthy workers or military personnel. It was further determined that approximately 13 percent of this vast population reside in the urban areas.[6] The remaining 87 percent, the rural dwellers, produce the food required for China's teeming population. In the United States, by comparison, food producers number a mere 6.9 percent.[7]

Initially the regime was pleasantly surprised by the larger than estimated population as shown by the 1953 census. It claimed that such a source of manpower would help to speed China's economic recovery. However, the problem of how to feed a rapidly growing population soon became the number one problem for the planners. Estimates of population increase indicated that China's population would reach 595.5 million by the end of 1953 and 656.6 million in 1957.[8]

The birth and death rates of mainland China for 1952-57 are indicated in the following table per 1,000 population:[9]

Year	Birth rate	Death rate	Natural increase
1952	37	18	19
1953	37	17	20
1954	38	13	24
1955	35	12.4	22.6
1956	32	11.4	20.6
1957	34	11	23

[6]US Department of Commerce, Bureau of Census, Cities of Mainland China, Series P95 No. 59, p. 6.
[7]Leon H. Keyserling. Agriculture and the Public Interest, p. 18.
[8]Chu-Yuan Cheng, Communist China's Economy, 1949-1962, p. 133.
[9]Sripati Chandrasekhar, China's Population, p. 50.

China's population growth rate was approximately 2.0 percent, and death rate had declined considerably from 17 per thousand since 1953. However, the death rate already compares well with the US rate of 9.5 per thousand in 1957-58,[10] and any further large decrease would be most improbable.

Such a growth rate placed the 1960 China population at 646.5 million persons. Such a large population in an area of 3,699,227 square miles represents a density of 174.77 persons per square mile:[11] US density is 49.97 persons per square mile.[12] To aggravate the food producing problem further, China is considered to have less than one-half acre of food producing soil per person, as compared to 2.5 acres per person in the United States. The Chinese farm population has been squeezed into areas where the soil is good enough for cultivation. Consequently, a more realistic density is 1,500 persons per square mile compared with approximately 200 persons per square mile in the United States. Therefore, it indicates that if the United States were to have the same population density as China, its crop area would have to feed over 1 billion people instead of the present population of 180 million.[13]

Further projections of the population based on the 2 percent growth rate indicates a Chinese population of 737 million in 1965, 811 million in 1970, 835 million in 1975, and 989 million in 1980.[14]

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[10]Yuan Li Wu, The Economy of Communist China, p. 92.
[11]United Nations, Statistical Yearbook, 1961, p. 110.
[12]Ibid., p. 106.
[13]Callis, op. cit., pp. 18-19.
[14]Wu and others, The Economic Potential of Communist China, p. 15.

A 1953 survey in Shanghai, showed that 17 percent of the women were pregnant twice a year, 53 percent once a year, and 22 percent twice in 3 years. After analyzing the survey figures, the Government initiated a birth control program. Birth control was first advocated in the National People's Congress in 1954 by Shao Li-tze and was vigorously encouraged in 1955-56, with a full-scale campaign for encouragement of birth control methods being instituted in late 1956.

The Minister of Health, Mrs. Li Le-chuan, stated that without effective birth control, China could not free itself from poverty and become prosperous, rich, and strong. Such measures as abortions and sterilization on request, increased production of low cost contraceptives, raising the minimum age for marriage, and a program to extend the knowledge and practice of birth control techniques met with miserable failure.[15] The principle cause of the failure may be attributed to the traditional ethical value attached to rearing a large family and to Communist concepts of anti-Malthusism. Even more importantly, birth control is found to be effective only in advanced economic societies where the average level of education and personal consciousness is high and a scientific method is widely applied. When the overwhelming majority of the population is still illiterate or semi-illiterate, birth control hardly can produce any significant results.[16]

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[15]Hughes and Luard, The Economic Development of Communist China, pp. 209-210.

[16]Cheng, op. cit., p. 171.

During the Great Leap Forward the active birth control campaign was temporarily curtailed, if not entirely suspended.[17] The failure of the Great Leap Forward and the associated food shortages caused the regime to reinstitute an active birth control program. Previous measures were reemphasized through an active propaganda and education program.[18] The present drive relies largely on raising the marriage age and condoning abortion. However, even with these measures, the population continues to grow at about 2 percent a year.[19]

This continuing population growth, from an already immense base population, continues to create a severe economic problem that will constitute a real obstacle to the modernization of China. The failure of the regime to control the birth rate by educating the population has been very evident. A strong-arm alternative of tightly controlled family food rationing could force the population to adhere to Government policy or face starvation. Although, there are no indications that the authorities intend to follow such a course of action, it could be a very effective measure.

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[17]Wu, The Economy of Communist China, p. 92.
[18]Cheng, op. cit., p. 171.
[19]Wu, The Economy of Communist China, p. 92.

CHAPTER 5

TRANSPORTATION

All modes of transportation have played a vital role in Chinese economy, but the railway and road transport, with their associated volume of traffic, will be considered here only as a measure of growth and progress.

Primitive, inadequate, and costly transport has been one of the key factors limiting China's economic development.[1]

In 1949, mainland China (excluding Outer Mongolia and Tibet), with a territory roughly the size of the United States, had only 13,000 miles of railway.[2] The national highways open to traffic in 1949 totaled approximately 42,000 miles.[3] In 1950, China's western-most railhead was 1,700 miles away from its western frontier. There were then but two rail lines linking north and south China, and both of them ran within 400 miles of the coast.[4] Therefore, only east China and southern Manchuria were well served while south and west China were barely touched.[5]

The Communist industrialization program necessitated a vast expansion of China's inadequate road and rail network. Sun Yat-sen had pointed out that if all railroads could be linked into one system, China's people would have cheap food to eat. In addition to

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[1] W. W. Rostow, The Prospects For Communist China, p. 230.
[2] Ibid.
[3] Yuan Li Wu, An Economic Survey of Communist China, p. 374.
[4] Helmut G. Callis, China, Confucian and Communist, p. 362.
[5] Rostow, op. cit., p. 230.

the economic considerations, reasons of military strategy gave another strong incentive for improving transportation facilities.[6]

The Communists, therefore, developed a transport plan, aimed at safeguarding adequate flow and distribution of industrial and farm products.[7] The plan provided for the greater part of capital construction expenditure on transportation and industry in 1950-1951 to be devoted to rehabilitation of the transportation system.[8] In 1952, 17.4 percent of the investment in capital construction went to transportation, in 1957, 15 percent; and in 1959, 20.5 percent.[9] The indication was that transportation was receiving third or fourth priority in the years 1950-59.

The construction program increased the available road and railroad mileage and utilization as indicated in the following chart:[10]

Year	Miles of railroad	Railroad cargoes (in millions of metric tons)	Miles of highway
1950	13,342	99.2	61,680
1951	13,820	110.5	64,440
1952	14,539	131.0	72,000
1953		157.5	84,000
1954		189.1	

The regime continues to emphasize transportation system expansion; however, the rough topography and high relief of China's surface

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[6]Callis, op. cit., p. 362.
[7]Yuan Li Wu, The Economy of Communist China, p. 32.
[8]Ibid., p. 108.
[9]Ibid., p. 97.
[10]Wu, An Economic Survey, pp. 349, 363, 374.

offers tough obstacles to overland transportation. Railway and highway construction in most parts of the nation are tremendously expensive. The east-west axes of the mountain ranges, especially in central and western areas, handicap the construction of north-south transportation facilities.[11] As late as 1959, there was not yet a single railroad traversing the whole of China from west to east.[12]

In February 1965, China was estimated to have only 23,000 miles of railway track and about 6,600 locomotives. The United States by contrast, has 376,000 miles of track and operates 34,000 locomotives. China's highway net totaled 300,000 miles, with very little of it modern. The best roads are the military ones located in the strategic frontier areas such as Sinkiang, Tibet, and Yunnan Provinces.[13]

There are an estimated 200,000 civilian and military trucks in all of China,[14] and the automotive industry turns out approximately 23,000 a year.[15] Tiny Japan operates almost 4 million trucks while the United States has 14 million trucks in operation.[16]

The importance of transportation construction is recognized by the Government, and they are working hard to improve it. However,

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[11] Ibid., p. 374.
[12] Callis, op. cit., p. 362.
[13] "Just How Much of a Threat Is Red China?," US News and World Report, 22 Feb. 1965, p. 41.
[14] Ibid.
[15] "Red China: Paper Tiger?," US News and World Report, 25 Oct. 1965, p. 41.
[16] "Just How Much of a Threat Is Red China?," p. 41.

there is evidence that they have been more interested in reaching a target or setting a new record than in building solidly. Construction targets frequently cannot be met because too much repair work is accumulating on recently constructed or reconstructed lines.[17] A great deal of planning and expenditure of scarce capital is required to improve China's transportation system into an efficient vital part of her economy.

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[17]Callis, op. cit., p. 364.

CHAPTER 6

NATURAL RESOURCES

The Communist regime has made repeated boasts of the wealth of natural resources in China and of the increasing effort to uncover them. Although investigations and geological surveys still are being conducted on a large scale and no exact figures have been released, the general picture of China's mineral resources is fairly clear.[1]

China has much greater coal resources than any other country in Asia. They probably are inferior only to those of the Soviet Union and the United States. It was estimated in 1945 that these reserves were approximately 283 billion metric tons. It is estimated that one-sixth of this amount is anthracite of a high grade and that coking coal, used in steel production, is limited and poorly distributed.[2] In 1947 the Chinese Nationalists estimated her coal reserve to be 440 billion metric tons.[3]

Coal production has developed in the more accessible areas in the northeast rather than in the richest provinces. The total output for all China was only 30 million metric tons in normal years between the First and Second World Wars and reached 400 million by

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[1]Chang-tu Hu, China, Survey of World Cultures, p. 17.
[2]George B. Cressey, Land of the 500 Million, p. 134.
[3]T. J. Hughes and D. E. T. Luard, The Economic Development of Communist China, p. 98.

1960.[4] China's coal reserves will last for centuries, even at greatly increased rates of consumption.[5]

China is moderately endowed with iron ore but only a few areas have large deposits of high quality.[6] Of the total reserves of 2,184 million metric tons, two-thirds is in Manchuria. Manchurian ores are mostly low grade, with only 30 to 40 percent iron, and the rock contains as much as 50 percent silica.[7] In 1960, reports of new discoveries of 10 billion tons of iron ore that assayed at more than 50 percent iron oxide improved the somewhat poor picture for China.[8] Previous to this unconfirmed report, it was estimated that all of China's iron ore reserves would be depleted in a decade or two, if used in the United States.[9]

In 1949, the oil reserves in China were thought to be very modest and, in general, were located in remote areas. The prospects looked inviting to the regime and extensive search programs were initiated. In 1957, the Chinese officially announced that their oil reserves were 1.7 billion tons. In 1960, a non-Chinese source reported that China's measured oil reserve was 200 million tons and her estimated total reserve was 5.9 billion tons. In 1960, the United States Joint Publications Research Service estimated the reserves at about 2 billion tons.[10]

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[4]George B. Cressey, Asia's Lands and Peoples, p. 9.
[5]Cressey, Land of the 500 Million, p. 135.
[6]Cressey, Asia's Lands and Peoples, p. 102.
[7]Cressey, Land of the 500 Million, p. 141.
[8]Felix Greene, Awakened China, p. 97.
[9]Cressey, op. cit., p. 141.
[10]US Department of Agriculture, Communist China's Agriculture, p. 566.

In addition to her reserves of liquid oil, China has large deposits of shale and coal from which synthetic oil might be extracted. Oil-bearing shale deposits, totaling more than 21 billion tons, have been discovered in many parts of the country. At the current extraction ratio of 1 ton of petroleum from 25 tons of shale, 21 billion tons of oil shale might add an additional 900 million tons of petroleum to the existing reserve of liquid oil.[11]

Mainland China's huge coal deposits also form a potential source of synthetic oil. Much of her huge quantity of coal reserve is of the bituminous type that is thought to have an oil content as high as 46 percent.[12]

The figures on China's oil reserves vary among sources, but, even at the most conservative estimates, a substantial increase has been realized in the past few years.

One oil expert is convinced that recent new discoveries will in time make China one of the great oil-producing countries of the world. However, it will take some time to bring these fields into production.[13]

Next to iron, tin is China's most valuable metallic resource. At times, China has held third place in world production.[14]

China's reserves of tungsten are the largest in the world.[15] At times, China has supplied the major part of the world market.[16]

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[11] Ibid., p. 567.
[12] Ibid.
[13] Greene, op. cit., p. 98.
[14] Cressey, Asia's Lands and Peoples, p. 103.
[15] Cressey, Land of the 500 Million, p. 144.
[16] Cressey, Asia's Lands and Peoples, p. 103.

China is one of the world's principal sources of antimony. Total reserves have been estimated at 3.8 million metric tons.[17] Chinese antimony resources are recognized as the world's best, and, under stable conditions, output could reach 20,000 tons annually.[18]

China's copper deposits are small and scattered. Her reserves are of low quality, and she apparently will never be able to supply more than part of her domestic requirements.[19]

The reserves of lead and zinc appear adequate, but these metals have been imported in the past, because of improper mining facilities.[20]

Aluminum is quite common in many rocks, in fact, twice as common as iron. Bauxite is known in Yunnan and Shantung and suitable shale is found in Liaoning and Kansu. The Japanese turned out 20,000 tons in Manchuria in 1943, and the potential is available if the Chinese exploit it.[21]

Mercury is produced in adequate amounts for domestic needs.[22]

Sulphur production is widespread, despite a limited supply. The prospects for self-sufficiency are poor.[23]

Large amounts of salt are produced for domestic consumption. The normal annual production is about 3 million metric tons a year. Salt may follow coal and iron as China's most valuable mineral resource.[24]

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[17] Ibid.
[18] Cressey, Land of the 500 Million, p. 145.
[19] Cressey, Asia's Land and Peoples, p. 104.
[20] Cressey, Land of the 500 Million, p. 146.
[21] Ibid.
[22] Cressey, Asia's Lands and Peoples, p. 104.
[23] Ibid.
[24] Ibid.

China is poor in precious metals, although some gold is mined in North Manchuria, Sinkiang, Tibet, and western Szechwan.[25] Silver production is limited to small amounts obtained from lead by-products in Hunan.[26]

Among the minerals China appears to lack, at least in quantity, are chromium, cobalt, nickel, and platinum.[27]

The following table is a summation of China's mineral sufficiency:[28]

Surplus for export	Adequate for present needs	Apparently deficient
Antimony	Aluminum	Chromium
Bismuth	Asbestos	Copper
Coal	Cement materials	Gold
Fluorite	Gypsum	Lead
Graphite	Iron	Nickel
Magnesite	Manganese	Petroleum
Molybdenum	Mercury	Sulphur
Talc	Phosphate	Zinc
Tin	Salt	
Tungsten		

A look at China's resources indicate that she is only modestly endowed with natural wealth. It is fortunate that coal is superabundant, for it is the key to power and to chemical industry. Before many decades, however, the shortage in metals may be serious.[29] For the present, there is every indication that China cannot match the United States or the USSR in the quantity of her mineral resources.

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[25] Hu, op. cit., p. 355.
[26] Cressey, Asia's Lands and Peoples, p. 104.
[27] Cressey, Land of the 500 Million, p. 148.
[28] Cressey, Asia's Lands and Peoples, p. 100.
[29] Ibid., p. 104.

The assets in terms of current industrial needs are good, but large amounts of capital will be needed to bring these resources into full production.[30]

[30]Cressey, Land of the 500 Million, p. 148.

CHAPTER 7

GROSS NATIONAL PRODUCT

An examination of China's Gross National Product (GNP) will indicate her economic growth rate since 1949. A number of sources produced a variety of GNP figures, but the following table, from the Stanford Research Institute (SRI), struck a happy medium:[1]

Communist China's GNP
(in billions of US$ @ 213 Yuan=$1)

Year	SRI Statistics	Communist Statistics
1952	32.0	27.0
1953	34.0	32.2
1954	35.6	33.6
1955	37.8	35.7
1956	42.0	40.4
1957	43.1	42.0
1958	48.1	
1959	51.8	
1960	52.5	
1961	35.6	
1962	47.4	

The above figures indicate that China's GNP increased at a rate of approximately 6 percent annually. This rate is within the 6-7 percent increase cited by most authorities[2] and compares very favorably with Communist statistics for 1952-57.[3]

The per capita income growth rate is another indicator of national growth. The following table, with 1952 = 100, provides

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[1]Yuan-19 Wu and others, The Economic Potential of Communist China, p. 120.

[2]Eckstein, Hollister, Cheng, Rostow, Lui, Yeh and others.

[3]Ta-Chung Liu and Kung Chia Yeh, The Economy of Chinese Mainland, p. 220.

an index for China's per capita income in 1952-65.[4] The average annual growth rate of per capita income for the 1952-1965 period, was 1.6 per cent.[5]

Per Capita Income Level			
Year	Income Level	Year	Income Level
1953	103	1960	130
1954	106	1961	93
1955	108	1962	107
1956	117	1963	111
1957	119	1964	119
1958	133	1965	123
1959	139		

In prewar China, 64.5 percent of the national product came from agriculture. This situation remained relatively unchanged during the early years of Communist control. However, the regime planned and executed a vast industrialization program at the expense of agriculture. The following table indicates the resultant shift of the output value of these two components of the combined gross value:[6]

Breakdown of Gross Output Value		
Year	Industry	Agriculture
	(percent of total)	
1949	30.1	69.9
1950	33.3	66.7
1951	38.6	61.4
1952	41.5	58.5
1953	47.2	52.8
1954	50.2	49.8
1955	49.7	50.3
1956	54.7	45.3
1957	56.5	43.5
1958	63.6	36.4
1959	66.6	33.4

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[4] H. Hunter, "Estimated Chinese Growth Trends, 1952-1965," p. 10.

[5] Ibid.

[6] Chu-Yuan Cheng, Communist China's Economy, 1949-62, p. 114.

The successes of the Chinese growth had convinced the regime of the soundness of its industrialization and it commenced the Big Leap Forward. Plagued with three successive years of crop failures, 1959-61, resulting in shortages of raw materials for industry as well as food for the people, the Great Leap came to a grinding halt. The first table reflects the 1961 drop in GNP, as a result of the Great Leap, and the 1962 recovery progress with the shift of policy to emphasize agricultural improvement.

Through extrapolation from the meager information from China and exercise of personal expertise, the Stanford economists established China's 1964 GNP at $48.7 billion for a growth rate of 5.0 percent for the years 1957 to 1964.[7] These figures are very close to another estimate of $49.5 billion for a growth rate of 5.1 percent during the same period.[8] From this point on, the experts differ. SRI's extension of GNP indicates that a 7.5 percent growth rate will prevail and that,with maximum efficiency in agricultural/industrial recovery, China's 1970 GNP will be $80 billion.[9] Mr. Ozaki forecasts the growth rate as 8-10 percent and the 1970 GNP as $117 billion.[10]

A September 1965 SRI publication indicated a super conservative growth rate for China from 1965 to 1980. The authors, Francis Hoeber and Keith Lumsden, agreed generally with the aforementioned sources

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[7]Wu and others, op. cit., p. 158.

[8]Shotaro Ozaki, "Japanese Researcher Reports on the Scope of Economic Development Under the Five-Year Plans in Communist China," Communist China Digest, No. 159, p. 27.

[9]Wu and others, op. cit., p. 158.

[10]Ozaki, op. cit., p. 127.

in that China's 1965 GNP was $47 billion. They then forecast an extremely low growth rate for China until 1980 as indicated below.[11]

Forecast of GNP Growth Rate

Year	GNP (Billions of US$) @ 2.3 Yuan=$1	Growth rate (in percent)
1965	46.9	
1966	47.0	0.9
1967	47.8	0.9
1968	48.3	0.9
1969	49.1	1.8
1970	50.5	2.6
1971	52.1	3.4
1972	54.3	4.2
1973	57.0	4.4
1974	59.6	4.6
1975	62.6	4.8
1976	65.3	4.9
1977	68.5	5.0
1978	72.0	5.1
1979	75.8	5.1
1980	79.6	5.2

This extremely low growth rate is attributed to the following factors:[12]

Indicator	Situation in Communist China
Gold and foreign exchange holdings	Unknown but probably not trivial
Credit availability	Low
Skilled and semiskilled labor force	Low
Domestic savings	Low but can be enforced
External aid	Negligible since 1960
Excessive productive capacity	Low
Marginal output-capital ratio	Low in sixties and early seventies
Foreign trade	Not significant

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[11]Francis P. Hoeber and Keith G. Lumsden, The Economic Potential of Communist China To Support Military Programs, 1965-1985, p. 10.

[12]Ibid., p. 8.

In spite of the convincing argument proposed above, research has not supported such a low growth rate as a general consensus among the economic authorities on Communist China. The 1970 GNP of $80 billion, representing approximately a 7 percent growth rate, as proposed by the 1964 Stanford Research Institute report appears to be the most realistic and the product of the most sound analysis.

There are no indications that China's growth rate is due for any quantum leaps. Rather, it is more realistic to assume that her growth rate will follow the pattern of underdeveloped countries growth as established by history: a pattern that shows a high initial growth rate that slows down and stabilizes at a much lesser rate as the country's economy becomes more developed and sophisticated. The Soviet economy is a good example of such a pattern. The USSR experienced a spectacular growth rate of more than 7 percent annually in the 1950's, and experts reported that it would overtake and surpass US industrial power very soon. However, the USSR growth rate currently has fallen to around 2.5 percent, causing the Soviet Union to slip from second to fifth place among industrial countries in overall economic growth.[13]

Since available statistics do not permit a prediction as to when or at what growth rate China will stabilize, the following table was compiled to indicate China's GNP at various growth rates during the period 1970-80, using the 1970 figure of $80 billion as a base:

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[13] US News and World Report, "Communism-Facing a Clouded Future," 3 Jan. 1966, pp. 35-36.

GROSS NATIONAL PRODUCT AT VARIOUS GROWTH RATES
(in billions of US$)

Year	7%	6%	5%	4%	3%
1971	85.6	84.8	84.0	83.2	82.4
1972	91.6	89.9	88.2	86.5	84.9
1973	98.0	95.3	92.6	90.0	87.4
1974	104.9	101.0	97.2	93.6	90.0
1975	112.5	107.0	102.1	97.3	92.7
1976	120.3	113.4	107.2	101.2	95.5
1977	128.7	120.2	112.6	105.2	98.4
1978	137.7	127.4	118.2	109.4	101.4
1979	147.3	135.0	124.1	113.8	104.5
1980	157.8	143.1	130.3	118.4	107.8

By using the above GNP figures and the predicted population figures from Chapter 4, the 1980 per capita income growth rate percentages, and US$ equivalents, at the different GNP growth rates, are proposed.

1980 PER CAPITA INCOME AT VARIOUS GNP GROWTH RATES

GNP Growth Rates (in percent)	Per capita income growth rates (in percent)	In US$
7	4.9	159
6	3.8	145
5	2.8	132
4	1.9	120
3	1.1	109

The following figures indicate the percentage of GNP the Chinese used for capital investment in 1950-59:[14]

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[14]Choh-Ming Li, Industrial Development in Communist China, p. 40.

YEAR	GNP (percent)	YEAR	GNP (percent)
1950	5.5	1955	13.8
1951	6.4	1956	17.9
1952	9.1	1957	15.9
1953	12.4	1958	23.9
1954	13.9	1959	25.7

The average of these percentages of investments reveals that 14.4 percent of total GNP went into gross capital investment for the period.

Using 15 percent as a realistic portion of the GNP that the Chinese will continue to allot for capital investment, the following table indicates the total amount of monies available during period 1965-80 for agricultural/industrial investment, in billions US$, at indicated growth rate:

PERIOD	7%	6%	5%	4%	3%
1965-80	218.5	201.8	190.6	179.7	169.5

CHAPTER 8

AN ANALYSIS

The previous chapter indicates the percentages of gross national product that would be available, with different growth rates, for capital investment. It is imperative that we look at how this wealth could be used and how it would affect China's power position.

As shown in previous chapters, China requires approximately 200 million tons of food grains to feed 700 million people. By 1980, China's population will number almost 1 billion; an increase of 300 million persons. For every increase of 100 million in population, an additional 30 million tons of food grain would be required. Judicious use of 20 million tons of fertilizer on the currently available 267 million acres of arable land will produce an additional 50 million tons of grain.[1] This additional production capability presupposes sufficient water through proper irrigation and assumes no natural calamities. Therefore, it is apparent that by 1980, China will require an additional 90 million tons of grain or approximately a 50 percent increase over 1964, her best production year. During 1964, China used approximately 10 million tons of fertilizer to produce 195 million tons of grain. Therefore, the fertilizer required for

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[1]Yuan-li Wu and others, The Economic Potential of Communist China, p. 37.

any increase in grain production would be in addition to present capabilities.

Assume that the present arable land can produce, through the use of chemical fertilizer, the 290 million tons of grain required by 1980. A requirement of an additional 40 million tons of fertilizer over that presently used is foreseen. The Stanford team estimated that the cost of fertilizer plant capacity is $214 per ton.[2] Professor Cheng estimated the cost of a 1-million-ton annual capacity plant at $100 million and a building time of 5 years. Therefore, an expenditure of from $4 billion to $8.5 billion would be necessary by 1975 for China to become self-sufficient in fertilizer production by 1980.

However, it is not likely that the present tillable land will produce this additional grain, since a point of diminishing returns, where it is no longer economically feasible to apply additional fertilizer, is likely to occur at the end of this decade.[3] To produce more grain the Chinese must resort to land reclamation. As mentioned in chapter 1, the cost of reclaiming 250 million acres of virgin land claimed suitable for cultivation is $44 billion (computed at $180 per acre).

It is considered that China will not take either of the extreme measures of developing only fertilizer production or maximum land reclamation. Rather, she will continue her current

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[2] Ibid., p. 93.
[3] Ibid., p. 99.

policy of improving each sector as capital can be allocated to it and hope to purchase ever decreasing amounts of fertilizer and food grains abroad to supplement productivity. Regardless of the route China takes, the above two programs are time-consuming and will require great expenditures of already scarce monies.

The regime's desires to mechanize agriculture were amplified at the Tenth Plenary Session of the Eighth Central Committee of the Chinese Communist Party in November 1962. The arduous and complicated task of agricultural mechanization was forecast to require 20 to 25 years to complete.[4] Although it has been given a low priority, this program is scheduled for completion in 1982-87. Therefore, the regime is further obligated to spend the greater portion of $13 billion to $20 billion to complete this program on time. The above figures do not include mechanization of agriculture on the reclaimed virgin land nor the estimated annual cost of $1 billion to maintain the mechanization.

China made claims it would surpass Britain industrially by 1967. After the gross failure of the Great Leap Forward, she did not openly abandon these plans, although industry received a lower priority. If China is to match Britain's 1967 output in steel, even by 1980, however, she must double her peak year (1960) production and still would remain considerably behind the US and USSR by some ten fold. To produce 36.8 million tons by

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[4]Choh-Ming Li, Industrial Development in Communist China, p. 148.

1980, China would have to build 10 modern steel plants, each with a capacity of 1.5 million tons. This construction would require 7 years and $800 million per plant to complete[5] and a total capital outlay of $8 billion.

Based on 1952 figures, the Chinese Communist economy on the eve of the First Five Year Plan was much more underdeveloped than the Soviet economy on the eve of its First Five Year Plan. W. W. Rostow predicted that if China reached the Soviet 1952 GNP level by 1970, she would reach the US 1952 GNP level by around 1990.[6] In 1928 the Soviet GNP was $35 billion, while China's 1952 GNP was $30 billion. The USSR GNP in 1952 was $100 billion[7], and China's 1970 GNP is estimated to be only $80 billion (chapter 7). If China maintains a growth rate of 7 percent, she will match the USSR 1952 GNP level in 1974 and the 1962 level of $253 billion[8] in 1987. At the 7 percent growth rate, China will equal the US 1952 GNP of $350.6 billion at current prices or $358.3 billion at 1954 constant prices[9] in 1992 or 1993.

Mr. Rostow's prediction seems quite optimistic, as an underdeveloped country's rate of growth initially is high but eventually reaches a leveling off point. A growth rate of 7 percent is a very

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[5]Chu-Yuan Cheng, Communist China's Economy, 1949-1962, p. 168.
[6]W. W. Rostow, The Prospects for Communist China, p. 260.
[7]Ibid., p. 258.
[8]US Congress, Joint Economic Committee. Annual Economic Indicators for the USSR, p. 131.
[9]Organization for European Economic Co-operation, "Statistics of National Product and Expenditure, 1938 & 1947 to 1955," Paris 1957, pp. 102 & 103.

ambitious plan indeed and one the USSR found impossible to maintain. All indications suggest that China, because of her exploding population, has less of a chance for a high growth rate than the USSR did. The Soviet population problem was one of considerably less magnitude. China's exploding population, with its millions of additional mouths to feed, presents an ever-increasing financial problem to the regime. The additional food requirements, as well as the production costs of consumer goods, drain off scarce government funds that otherwise could be used for investment and national growth.

Mr. Rostow alternately predicted that China would reach the equivalent of the US 1952 GNP by 2010, if a lower growth rate was maintained.[10] Projecting China's growth rate at 5 percent, she will match the US 1952 GNP in 2001; at 4 percent in 2008; and at 3 percent during the year 2021. Apparently, Mr. Rostow, is implying that reaching the US 1952 GNP is an indication that a country is a great power or at least is approaching the threshold of becoming one. However, the very costly solution to feeding a greatly expanding population will be a primary factor in government spending. China has given every indication that she intends to continue feeding her people and not to starve millions as the Soviets did to pay for industrialization.

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[10]W. A. Douglas Jackson, "The Chinese Population Problem," p. 260.

To meet her basic obligation, China must maintain a 2 percent annual GNP growth rate to keep pace with her 2 percent population growth rate. National economic growth, including industrialization, can only be realized from a higher GNP growth rate. As noted in chapter 7, a GNP growth rate of 7 percent will produce a 1980 Chinese per capita income of only $159. This figure, compared to the 1964 US per capita income of $3182,[11] is indicative of the economic problems created by the exploding Chinese population. In view of the above statistics, it is extremely problematical that the Communist regime can channel enough of the annual GNP toward generation of a powerful nation and still maintain a controllable population.

After analyzing only a portion of the agricultural program (fertilization, mechanization, and land reclamation) plus steel production, it was determined that $69-80 billion would be required to complete them, if China should attempt to do so. These figures represent from 31 to 47 percent of the portion of GNP available for capital investment when compared with the various growth rates. For China to take middle of the road measures in agriculture, it is estimated that at least $39-48 billion must be spent to accomplish 1980 minimum levels in the programs discussed above. These figures represent 18-22 percent of the available GNP for the same period. These percentages of

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[11]Leon H. Keyserling, Agriculture and the Public Interest, p. 55.

GNP are far in excess of the amounts spent for China's capital investment, even during the productive years of 1958 and 1959, prior to the great slump of the Great Leap years. Additional programs of irrigation, electrification, all industrial construction and expansion, exploitation of natural resources, road and railroad building, military spending, science and technology, and improved and increased consumer goods plus many others were not even examined. However, it becomes very obvious, even to the layman, that China does not have the necessary capital to complete the major agricultural/industrial programs that would make her self-sufficient in food production and an industrial giant by 1980.

Therefore, it is believed that China must import:

1. grain to supplement her food shortages and feed her exploding population,

2. fertilizer to increase grain productivity until she is able to produce her own, and

3. industrial machinery and complete plants until her own industry is capable of producing this vitally needed commodity.

The above imports will be at the expense of scarce foreign capital and, in the case of consumable goods, at the expense of permanent economic growth within her own country. Such imports necessarily will be many times more expensive to buy than to manufacture or produce internally, since China is richly endowed with a seemingly endless supply of cheap labor. Continued outlay of capital for imports will appreciably delay China's time

schedule for national industrialization. The volume of imported machinery and other industrial goods will be extremely limited, if imports of food or the means to produce food must be maintained. Mr. Wu sums up the impact of China's imports when he stated:

> . . .the rate of economic growth is not only subjected to the limitation of available savings, it is also constrained by the availability of imported machinery. The effective constraint therefore lies in the capability of the Chinese economy to convert resources not used up in consumption into the desired kinds of capital goods. Inasmuch as domestic industry is still inadequate, it is therefore essentially a constraint of the balance of international payments. . . . the rate of industrial investment may for some time to come be limited by the availability of imported equipment, while equipment import will be governed by three factors: the availability of long-term credit, export capacity, and the existence of any priority import for nonindustrial purposes. The last factor depends upon the extent of agricultural recovery and the need for imported food and other agricultural products. As long as industrial development lags, export capacity will also depend upon the extent of agricultural recovery, which is essential for an expanded supply of agricultural exports and for the production of raw materials for consumer goods and other light industry whose products might be exportable.[12]

Shortages of capital may seriously curtail China's international Communist activity. Her ability to influence underdeveloped countries is dependent on available funds which will remain extremely limited for years to come.

China commenced her foreign aid to selected free world countries in 1956, and the program has continued in varying annual amounts to the present time. The countries in Africa and

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[12]Yuan-li Wu, The Economy of Communist China, p. 104.

Asia have become the focal points of major efforts to establish beachheads in Western spheres of influence.[13] Peiping's motivations in extending economic aid are for recognition as the sole legal government of China and for international prestige for Communist China as a power in its own right.[14]

The small Chinese foreign aid program is designed for maximum propaganda and political benefit.[15] When potential political returns warrant, the Peiping regime has demonstrated its willingness to divert scarce resources from urgent domestic requirements into its aid programs.[16]

In spite of Chinese willingness to participate in foreign aid, the programs are limited to a large degree by meager national economic capabilities.[17] These limited capabilities coupled with the regime's lack of enthusiasm for aid, except as a token for political purposes, undoubtedly account for China's small aid program. The Chinese devote approximately two one-hundredths percent of their gross national product to foreign aid programs.[18]

Of the Chinese foreign aid commitments to the Asian and African non-Communist countries, only token amounts actually have been delivered. Up to the end of 1963, only a small portion of

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[13]US Department of State, Bureau of Intelligence and Research, The Communist Economic Offensive Through 1963, Research Memorandum RSB-43, p. ii (hereafter referred to as RSB-43).

[14]Ibid., p. 33.

[15]US Department of State, Bureau of Intelligence and Research, The Communist Economic Offensive Through 1964, RSB-65, p. 2 (hereafter referred to as RSB-65).

[16]RSB-43, p. 33.

[17]Ibid.

[18]RSB-65, p. 2.

the $446 million in Communist Chinese economic aid promised to underdeveloped countries of the free world actually had been drawn. If increasingly large amounts of Communist Chinese aid are drawn in the next few years, the strain may be greater on the Chinese economy and on foreign exchange reserves.[19]

Recent Chinese foreign aid grants have been very limited, and the majority of aid extended has been in the form of credits.[20]

China's reluctance to spend great sums of money in foreign aid for propaganda purposes at the expense of her own betterment was highlighted by her recent refusal to increase her grain-for-sugar contract with Cuba. Such an unexpected action startled Castro and possibly will place his regime in jeopardy. Continued actions of this type will cause underdeveloped countries to look with suspicion on offers of aid from Communist China.

Further, I submit that China will exert maximum effort to improve her agricultural sector to:

1. strive for self-sufficiency in food production for her exploding population,

2. provide ample raw materials for light industry,

3. hope for some improvement in heavy industry and,

4. improve the very dim, distant, nearly impossible prospects of accumulating surpluses to obtain capital for investment.

CHAPTER 9

CONCLUSIONS

China will not rise to the status of a world power, that is, possess the capability to impose her will on other world powers, by 1980. It is conceivable that her power position in the community of nations will be considerably enhanced by the year 2000, but only if she:

1. Solves her greatest detriment to economic growth - the exploding population. A huge portion of her GNP is required to merely expand her food production capability.

2. Expands her agricultural base to support her industrialization, food production and produce surpluses for sale.

3. Establishes a strong industrial base, and

4. Exploits her natural resources, which are adequate at the present to sustain her economic growth.

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